

WHAT IS CLAIMED IS:

- 1 1. A semiconductor laser, comprising;
2 a semiconductor substrate;
3 a laser layer on said semiconductor substrate;
4 at least two waveguide ridges located at a distance from
5 said laser layer, and
6 a first strip-shaped lattice structure comprising
7 alternating portions of conducting and non-conducting or
8 less conducting material, wherein said lattice structure is
9 located on the flat portions of the surface between said
10 ridges and at a distance from said laser layer above said
11 laser layer.

- 1 2. A semiconductor laser according to claim 1, further
2 comprising a second strip-shaped lattice structure located
3 lateral to the two outermost of said waveguide ridges,
4 wherein said lattice structure is located on the flat
5 portions of the surfaces lateral to said outermost ridges
6 and at a distance from said laser layer above said laser
7 layer.

- 1 3. The semiconductor laser according to claim 1, wherein
2 said lattice structure is located on a barrier or
3 insulating layer wherein said barrier defines the position
4 of said lattice structure relative to said laser layer.

- 1 4. The semiconductor laser according to claim 1, wherein
2 said lattice structure comprises a metal.

1 5. The semiconductor laser according to claim 4, wherein
2 said metal is chromium or a chromium alloy.

1 6. The semiconductor laser according to claim 1, wherein
2 said first strip-shaped lattice structure is located
3 adjacent to sides of said waveguide ridges, and wherein the
4 width and spacing of said waveguide ridges are selected
5 such that base points of the sides of said waveguide ridges
6 are located in a peripheral region of radiation from an
7 active zone of said laser layer.

1 7. A process for the production of a semiconductor laser
2 based on a semiconductor substrate with a laser layer
3 arranged on said semiconductor substrate and a strip-shaped
4 lattice structure, the process comprising the steps of:
5 a) producing a complete semiconductor laser structure
6 in an epitaxial process;
7 b) forming at least two waveguide ridges by removing
8 material from said semiconductor;
9 c) laser structure so as to form carrier surfaces
10 between said waveguide ridges and lateral to the outer of
11 said waveguide ridges; and
12 d) applying a lattice structure to said carrier
13 surfaces.

1 8. The process according to claim 7, wherein, preceding
2 step (d), the step of forming an insulating layer on said
3 carrier surfaces.

1 9. The process according to claim 8, wherein said lattice
2 structure comprises alternating portions of a conductive
3 and non-conductive or less conductive material.

1 10. The process according to claim 9, wherein said step of
2 applying a lattice structure includes applying a metallic
3 lattice structure with a lithographic process, comprising
4 the steps of performing a lithographic process to create a
5 lithographic structure and metallization of said
6 lithographic structure.